

第135回

附属社会創造数学センター主催

北大MMCセミナー

Date : 2023年5月2日(火) 16:30~18:00

Speaker : 野津 裕史 (金沢大学 教授)
NOTSU, Hirofumi (Kanazawa University)

Place : 北海道大学 電子科学研究所
中央キャンパス総合研究棟2号館5階 講義室

Title : A total design of finite element schemes for flow problems

Abstract:

In the development of numerical schemes for flow problems, especially in the framework of the finite element method, there are some key issues, e.g., the approximation of the convection term, the choice of a finite element, and the mesh control, where the last one is not special for flow problems. This talk introduces a total design of finite element schemes for flow problems and related results and applications[1-5]. Refs. [1] M.M. Rasid et al. A two-step Lagrange-Galerkin scheme for the shallow water equations with a transmission boundary condition and its application to the Bay of Bengal region- Part I: Flat bottom topography. Mathematics 11, 2023. [2] K. Futai et al. A mass-preserving two-step Lagrange-Galerkin scheme for convection-diffusion problems. J. Sci. Comput. 92, 2022. [3] J.S.H. Simon and H. Notsu. A shape design problem for the Navier-Stokes flow with a convective boundary condition. Comput. Appl. Math. 41, 2022. [4] D.O. Medeiros et al. Second-order finite difference approximations of the upper-convected time derivative. SIAM J. Numer. Anal. 59, 2021. [5] K. Goto et al. Twin vortex computer in fluid flow. New J. Phys. 23, 2021.

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